

CLAIMS

1. An electrolytic nitrogen gas generator comprising:
2 a. a cathode and an anode connected as part of an
electrical circuit that may be switched on or off;
4 b. an electrolyte in contact with the anode comprising an
active nitrogen compound selected from the group
6 consisting of organic hydrazides, organic hydrazino
carboxylates and amino guanidine salts;
8 c. wherein nitrogen gas is generated at the anode from
the active nitrogen compound when the electrical
10 circuit is switched on.

2. The electrolytic nitrogen gas generator of claim 1,
2 further comprising a cathode depolariser to suppress
hydrogen generation.

3. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrical circuit comprises a battery.

4. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrical circuit comprises a resistor.

5. The electrolytic nitrogen gas generator of claim 4,
2 wherein the resistor is a variable resistor.

6. The electrolytic nitrogen gas generator of claim 1,
2 wherein the active nitrogen compound comprises methyl
hydrazino-carboxylate.

7. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises urea.

8. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte is an ionic compound selected from
the group consisting of salts, acids and bases.

9. The electrolytic nitrogen gas generator of claim 8,
2 wherein the ionic compound is selected from the group
consisting of ammonium sulphate, sodium chloride, sulphuric
4 acid.

10. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte is held in an absorbent material.

11. The electrolytic nitrogen gas generator of claim 10,
2 wherein the absorbent material comprises an absorbent solid
selected from the group consisting of sponges, felts and
4 gels.

12. The electrolytic nitrogen gas generator of claim 10,
2 wherein the absorbent material is selected from the group
consisting of cellulose sponges and carbopol gels.

13. The electrolytic nitrogen gas generator of claim 1,
2 wherein the active nitrogen compound comprises oxalic
dihydriazide.

14. The electrolytic nitrogen gas generator of claim 1,
2 wherein the active nitrogen compound comprises
aminoguanidine bicarbonate.

15. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises aqueous sulphuric acid.

16. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises an antifreeze.

17. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises nitroethanol.

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18. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises nitromethane.

19. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises nitroguanidine.

20. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises a cupric salt.

21. The electrolytic nitrogen gas generator of claim 1,
2 wherein the electrolyte comprises copper sulphate.

22. The electrolytic nitrogen gas generator of claim 1,
2 wherein the anode comprises graphite.

23. The electrolytic nitrogen gas generator of claim 1,
2 wherein the anode comprises graphite fibre impregnated with
a polymer.

24. The electrolytic nitrogen gas generator of claim 1,
2 further comprising an ion permeable membrane separating the
cathode and a catholyte from the anode and the anolyte,
4 wherein the ion permeable membrane electrically couples the
catholyte to the anolyte.

25. The electrolytic nitrogen gas generator of claim 24
2 wherein the ion permeable membrane is selected from the
group consisting of cation selective membranes and anion
4 selective membranes.

26. The electrolytic nitrogen gas generator of claim 1,
2 further comprising a bipolar electrode separating the
cathode and a catholyte from the anode and the anolyte,
4 wherein the catholyte electrically couples the cathode to
the bipolar electrode and the anolyte electrically couples
6 the bipolar electrode to the anode.

27. The electrolytic nitrogen gas generator of claim 26
2 further comprising an oxidant in contact with the cathode.
28. The electrolytic nitrogen gas generator of claim 27
2 wherein the oxidant is selected from the group consisting
of manganese dioxide and a bromate salt.
29. The electrolytic nitrogen gas generator of claim 27
2 wherein the oxidant is sodium bromate.
30. The electrolytic nitrogen gas generator of claim 26
2 further comprising a reductant in contact with the bipolar
electrode.
31. The electrolytic nitrogen gas generator of claim 30
2 wherein the reductant is selected from the group consisting
of zinc powder and aluminium powder.
32. The electrolytic nitrogen gas generator of claim 26
2 wherein the electrolyte further comprises a depolariser for
depolarising the cathode of the bipolar electrode.
33. The electrolytic nitrogen gas generator of claim 32
2 wherein the depolariser comprises a dissolved salt of a
metal and the metal is deposited on the bipolar electrode
4 to depolarise the bipolar electrode when the circuit is
switched on.
34. The electrolytic nitrogen gas generator of claim 32
2 wherein the depolariser comprises a reducible organic
compound selected from the group consisting of
4 nitroethanol, nitromethane, and nitroguanidine.

35. The electrolytic nitrogen gas generator of claim 1
2 further comprising a transducer for capturing the nitrogen
gas generated at the anode and producing mechanical energy
4 therefrom.

36. The electrolytic nitrogen gas generator of claim 35,
2 wherein the transducer is mechanically coupled to a fluid
dispenser so that a fluid is dispensed from the fluid
4 dispenser when nitrogen gas is generated at the anode.

37. A housing for an electrolytic cell comprising an
2 anode, a cathode and an electrolyte biased together in
electrical contact, the electrolyte being contained by a
4 flexible membrane adapted to accommodate compression of the
electrolyte, the housing having an opening to permit
6 passage of gas evolved from the electrolyte during
electrolysis.